

This listing of claims will replace all prior versions, and listings of the claims in the application:

1. (Original) A method for fuel driveability index detection, the method comprising:
 obtaining a first input signal indicating a first oxygen sensor voltage;
 obtaining a second input signal indicating a second oxygen sensor voltage at a
period subsequent to said first input signal;
 determining a first voltage trend based on said first input signal and said second
input signal; and
 determining whether said first voltage trend is decreasing at a rate greater than a
first voltage threshold rate.
2. (Original) The method of claim 1, further including adjusting open loop fueling if
said first voltage trend is decreasing at a rate greater than said first voltage threshold rate.
3. (Currently Amended) The method of claim 2, wherein said adjusting said open loop fueling
occurs within about five seconds of a cold start of an ~~said~~ engine.
4. (Currently Amended) The method of claim 2, wherein said adjusting said open loop fueling
includes adding fuel to combustion chambers an ~~said~~ engine.
5. (Original) The method of claim 4, wherein said adding fuel is accomplished by
increasing a base pulse width command to fuel injectors of said engine.
6. (Original) The method of claim 1, further including sensing an engine run condition
prior to obtaining said first input signal.
7. (Original) The method of claim 6, wherein said sensing said engine run condition
includes determining whether a software logic flag indicating an engine run condition has been
set.

8. (Original) The method of claim 6, further including determining whether cold start is enabled if said engine run condition is sensed.

9. (Original) The method of claim 8, further including determining whether an engine crank time is exceeded if said cold start is enabled.

10. (Original) The method of claim 1, further including determining whether closed loop fueling is disabled prior to obtaining said second input signal.

11. (Original) The method of claim 1, further including determining whether engine coolant temperature is within a temperature operating window prior to obtaining said second input signal.

12. (Original) The method of claim 1, wherein said first input signal is saved for a period.

13. (Currently Amended) A method for fuel driveability index detection, the method comprising:
 obtaining a first input signal indicating a first oxygen sensor voltage;
 obtaining a second input signal indicating a second oxygen sensor voltage at a
period subsequent to said first input signal;
 determining a first voltage trend based on said first input signal and said second
input signal; and
 determining whether said first voltage trend is decreasing at a rate greater than a
first voltage threshold rate. ~~The method of claim 1,~~ wherein a software logic flag indicating a high driveability index is set if said first voltage trend is decreasing at a rate greater than said first voltage threshold rate.

14. (Currently Amended) A method for fuel driveability index detection, the method comprising:
obtaining a first input signal indicating a first oxygen sensor voltage;
obtaining a second input signal indicating a second oxygen sensor voltage at a
period subsequent to said first input signal;
determining a first voltage trend based on said first input signal and said second
input signal; and
determining whether said first voltage trend is decreasing at a rate greater than a
first voltage threshold rate. ~~The method of claim 1, further including:~~
determining whether said first voltage trend is increasing at a rate greater than a
second voltage threshold rate if said first voltage trend is not decreasing at a rate greater than said
first voltage threshold rate; and
determining whether an engine run timer is less than an engine run timer threshold
if said first voltage trend is not increasing at a rate greater than said second voltage threshold rate.

15. (Original) The method of claim 14, wherein a software logic flag indicating a low
driveability index is set if said first voltage trend is increasing at a rate greater than said second
voltage threshold rate.

16. (Original) The method of claim 14, further including:
obtaining a next input signal indicating a next oxygen sensor voltage if said
engine run timer is less than said engine run timer threshold;
determining a second voltage trend based on said first input signal and said next
input signal; and
determining whether said second voltage trend is decreasing at a rate greater than
said first voltage threshold rate.

17. (Original) The method of claim 16, further including adjusting open loop fueling if
said second voltage trend is decreasing at a rate greater than said first voltage threshold rate.

18. (Original) The method of claim 16, wherein a software logic flag indicating a high driveability index is set if said second voltage trend is decreasing at a rate greater than said first voltage threshold rate.

19. (Cancelled)

20. (Original) A system for fuel driveability index detection, the system comprising:
 an engine;
 an oxygen sensor disposed within the exhaust gas passage of said engine;
 an engine control module operatively connected to said engine; and
 said engine control module having a processor for obtaining a first input signal indicating a first oxygen sensor voltage, obtaining a second input signal indicating a second oxygen sensor voltage at a period subsequent to said first input signal, determining a first voltage trend based on said first input signal and said second input signal and determining whether said first voltage trend is decreasing at a rate greater than a first voltage threshold rate.

21. (Original) The system of claim 20, further including said processor adjusting open loop fueling if said first voltage trend is decreasing at a rate greater than said first voltage threshold rate.

22. (Original) The system of claim 21, wherein said adjusting said open loop fueling occurs within about five seconds of a cold start of said engine.

23. (Original) The system of claim 21, wherein said adjusting said open loop fueling includes adding fuel to combustion chambers of said engine.

24. (Original) The system of claim 23, wherein said adding fuel is accomplished by increasing a base pulse width command to fuel injectors of said engine.

25. (Original) The system of claim 20, further including said processor sensing an engine run condition prior to obtaining said first input signal.

26. (Original) The system of claim 25, wherein said sensing said engine run condition includes determining whether a software logic flag indicating an engine run condition has been set.

27. (Original) The system of claim 25, further including said processor determining whether cold start is enabled if said engine run condition is sensed.

28. (Original) The system of claim 27, further including said processor determining whether an engine crank time is exceeded if said cold start is enabled.

29. (Original) The system of claim 20, further including said processor determining whether closed loop fueling is disabled prior to obtaining said second input signal.

30. (Original) The system of claim 20, further including said processor determining whether engine coolant temperature is within a temperature operating window prior to obtaining said second input signal.

31. (Original) The system of claim 20, wherein said first input signal is saved for a period.

32. (Currently Amended) A system for fuel driveability index detection, the system comprising:
an engine;
an oxygen sensor disposed within the exhaust gas passage of said engine;
an engine control module operatively connected to said engine; and
said engine control module having a processor for obtaining a first input signal
indicating a first oxygen sensor voltage, obtaining a second input signal indicating a second
oxygen sensor voltage at a period subsequent to said first input signal, determining a first voltage
trend based on said first input signal and said second input signal and determining whether said
first voltage trend is decreasing at a rate greater than a first voltage threshold rate ~~The system of~~
~~claim 20~~, wherein a software logic flag indicating a high driveability index is set if said first
voltage trend is decreasing at a rate greater than said first voltage threshold rate.

33. (Currently Amended) A system for fuel driveability index detection, the system comprising:
an engine;
an oxygen sensor disposed within the exhaust gas passage of said engine;
an engine control module operatively connected to said engine; and
said engine control module having a processor for obtaining a first input signal
indicating a first oxygen sensor voltage, obtaining a second input signal indicating a second
oxygen sensor voltage at a period subsequent to said first input signal, determining a first voltage
trend based on said first input signal and said second input signal and determining whether said
first voltage trend is decreasing at a rate greater than a first voltage threshold rate ~~The system of~~
~~claim 20~~, further including said processor:
determining whether said first voltage trend is increasing at a rate greater than a
second voltage threshold rate if said first voltage trend is not decreasing at a rate greater than said
first voltage threshold rate; and
determining whether an engine run timer is less than an engine run timer threshold
if said first voltage trend is not increasing at a rate greater than said second voltage threshold rate.

34. (Original) The system of claim 33, wherein a software logic flag indicating a low driveability index is set if said first voltage trend is increasing at a rate greater than said second voltage threshold rate.

35. (Original) The system of claim 33, further including said processor:
 obtaining a next input signal indicating a next oxygen sensor voltage if said engine run timer is less than said engine run timer threshold;
 determining a second voltage trend based on said first input signal and said next input signal; and
 determining whether said second voltage trend is decreasing at a rate greater than said first voltage threshold rate.

36. (Original) The system of claim 35, further including said processor adjusting open loop fueling if said second voltage trend is decreasing at a rate greater than said first voltage threshold rate.

37. (Original) The system of claim 35, wherein a software logic flag indicating a high driveability index is set if said second voltage trend is decreasing at a rate greater than said first voltage threshold rate.

38. (Cancelled)

39. (Original) A vehicle comprising the system of claim 20.

40. (Cancelled)

41. (Original) A storage medium encoded with a machine-readable computer program code for fuel driveability index detection, the storage medium including instructions for causing a processor to implement a method comprising:

obtaining a first input signal indicating a first oxygen sensor voltage;

obtaining a second input signal indicating a second oxygen sensor voltage at a period subsequent to said first input signal;

determining a first voltage trend based on said first input signal and said second input signal; and

determining whether said first voltage trend is decreasing at a rate greater than a first voltage threshold rate.

42. (Cancelled)